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G. W. NISTLE.

CUT-OUT SWITCH FOR ELECTRIC LIGHTING OR OTHER CIRCUITS.

APPLICATION FILED APR. 28, 1902.

NO MODEL.

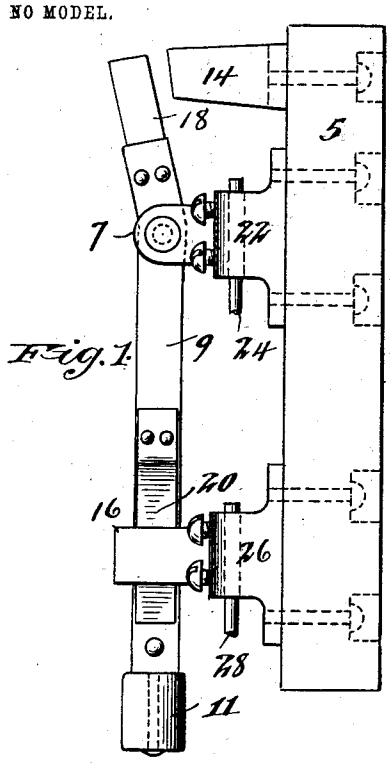


Fig. 1.

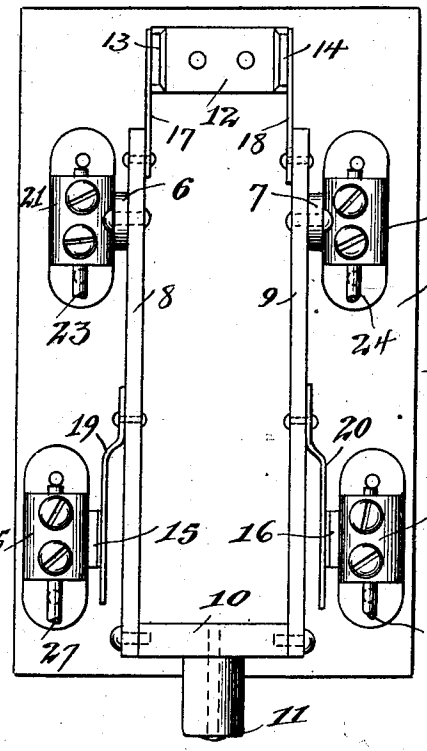


Fig. 2.

Fig. 3.

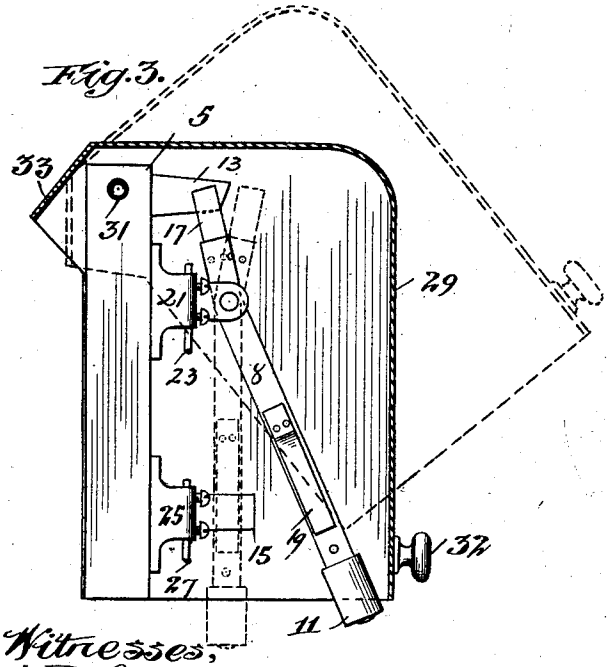
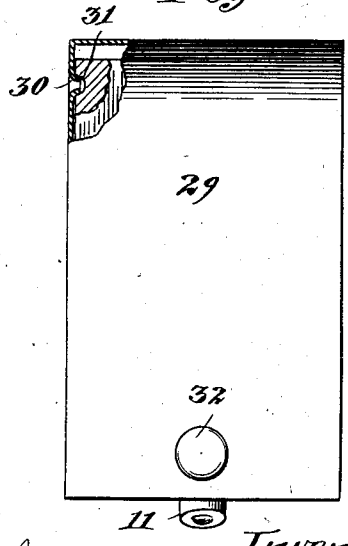


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE W. NISTLE, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO EVERETT W. BROOKS AND ROBERT L. GIFFORD, OF CHICAGO, ILLINOIS.

CUT-OUT SWITCH FOR ELECTRIC-LIGHTING OR OTHER CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 724,730, dated April 7, 1903.

Application filed April 28, 1902. Serial No. 105,014. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. NISTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cut-Out Switches for Electric-Lighting or other Circuits, of which the following is a specification.

My invention relates to cut-out switches for electric circuits, being designed more particularly for use in electric-lighting circuits to connect or cut out a local or lamp circuit with a main-line circuit. Switches of this character are ordinarily attached to a pole carrying the lamp or lamps at a convenient height from the ground to be readily operated and in order to prevent unauthorized manipulation of the switch are ordinarily inclosed in a box or casing provided with a suitable lock, the box or casing serving the additional function of protecting the parts of the switch from moisture and other deleterious effects of exposure.

My invention relates to that type of cut-out switches wherein sparking and consequent burning out of the switch are prevented by a construction which when the switch is manipulated in either direction insures the establishment of one path for the current before the other path is interrupted; and the principal object of my invention is to provide a switch of this type characterized by extreme simplicity and economy of construction, reliability of operation, and ease and safety of manipulation as compared with similar switches now in actual use.

To these and other ends my invention resides in a cut-out switch and a protecting hood or casing therefor having the peculiarities of construction and mode of operation, all substantially as hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevational view of a cut-out switch constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a view similar to Fig. 1, on a somewhat smaller scale, of the opposite side of the switch and showing the switch in full lines in a position to cut out the lamp-circuit and in dotted lines in a position to include the lamp-circuit in the main lighting-circuit, said view also illustrating in vertical section my improved protecting-hood for the switch and its manner of manipulation; and Fig. 4 is a front elevational view, partly broken away, of the hood in closed position upon the switch and illustrating my preferred means for pivoting the hood upon the bed-plate of the switch.

Referring to the drawings, 5 designates a bed-plate, herein shown as rectangular in form and made of any suitable non-conducting material. On this bed-plate are mounted a pair of standards 6 and 7, one on each side of the bed-plate, in the upper ends of which are pivoted the two arms 8 and 9, respectively, of a U-shaped switch, the lower ends of which arms are connected by a cross-piece 10, formed of insulating material and having a downwardly-extending handle 11, by which the switch is manually operated. Secured to the upper end of the bed-plate is a U-shaped piece 12, formed of conducting material and having a pair of parallel upstanding contact-posts 13 and 14, and at the opposite end of the bed-plate, on either side thereof, are mounted a pair of contact-posts 15 and 16. To the upper ends of the switch-arms 8 and 9, on the inner sides thereof, are secured a pair of elastic contact-blades 17 and 18, adapted to have sliding engagement with the contact-posts 13 and 14, respectively, while to the outer sides of the switch-arms, below the pivotal points of the latter, are secured a similar pair of spring contact-blades 19 and 20, adapted to have a similar sliding engagement with the posts 15 and 16, respectively.

At the base of the standards 6 and 7 and preferably integral therewith are the binding-posts 21 and 22, to which are connected the line-wires 23 and 24, respectively, of the main circuit connecting the poles of the generator, while at the base of the uprights 15 and 16 and also preferably integral therewith are similar binding-posts 25 and 26, to which are connected the lamp-circuit wires 27 and 28, respectively.

The operation of the parts as thus far described will be readily seen, but may be briefly stated as follows: With the switch in the position indicated in Figs. 1 and 2 the current

arriving by the wire 23 passes by way of binding-post 21, standard 6, switch-arm 8, spring-blade 19, contact-post 15, binding-post 25, through the lamp-circuit 27 28, thence by binding-post 26, contact-post 16, spring-blade 20, arm 9, standard 7, binding-post 22, and wire 24 back to and through the generator. When it is desired to cut out the lamp-circuit while the current is still on, the handle of the switch is thrown outwardly from the dotted to the full line position, (indicated in Fig. 3,) by which movement the lamp-circuit is obviously cut out by reason of the separation of the spring-blades 19 and 20 from their respective companion contact members 15 and 16, and the current then finds its way from wire 23 by way of binding-post 21, standard 6, arm 8, spring-blade 17, contact-posts 13 and 14 and their connecting base-plate 12, spring-blade 18, arm 9, standard 7, binding-post 22, and wire 24 back to and through the generator. By reference to Figs. 1 and 3 it will be seen that the contact-posts 13 and 14 in the main-line circuit and the similar contact-posts 15 and 16 in the lamp-circuit are of such heights and are so related to their respective contact-blades of the switch that in moving the switch in either direction contact is necessarily established at one end of the switch before it is interrupted at the other. Such construction and operation obviates injury to the switch through the formation of arcs between the contact members, and by bending the switch somewhat at the transverse line of its pivotal axis this result may be secured without an undue thickness of the switch mechanism and with a minimum angular movement of the switch itself. It will also be observed that by the described construction of the switch and the relative arrangement of its contacts it is impossible to either accidentally or intentionally produce a break in the current flowing through the main-line conductors, since the current always has a path through the switch either by way of the lamp-circuit or by way of the contact-piece 12.

In Figs. 3 and 4 I have shown a novel form and application of a protecting-hood or shield designed to protect the switch from the elements, as well as to prevent the unauthorized manipulation thereof. This hood, which is designated as an entirety by 29, is of a generally rectangular form and of longitudinal and lateral dimensions sufficient to enable it to fit over the sides and upper end of the bed-block 5 and of a depth amply sufficient to inclose the switch and its pivotal supports and contact devices, as plainly shown in Fig. 3. The hood is conveniently mounted on the bed-block in a fashion which permits the lower open end thereof to be readily swung outward and upward, as indicated in Fig. 3, by being pivoted through its side walls to the adjacent side edges of the bed-block, near the upper end of the latter. Any suitable and convenient means for thus pivoting the hood may be employed; but I prefer the means herein shown, which consist of an inwardly-projecting protuberance or bur, forming a trunnion 30 on the inner face of each side wall of the hood entering and engaging a small recess or hole 31, formed in the adjacent side face of the bed-block. The trunnion 30 may be easily and conveniently formed by being punched or struck up, as by a nail, from the outer side of the hood after the latter has been placed in operative position over the bed-block. For convenience in lifting the hood from over the switch the lower end of the hood may be provided with a knob 32. The hood is of course open at its lower end and on that side which normally lies in the plane of the base of the bed-block, and for greater protection against the introduction of moisture I provide the hood at its upper rear portion with a weather edge 33, which serves to shed moisture in an obvious manner.

From the foregoing it will be seen that by my invention I provide a simple, easily and cheaply constructed, and efficient form of cut-out switch which by its manner of operation eliminates all possibility of an interruption of the current while the latter is on the main-line wires whether flowing through the lamp-circuit or short-circuited therefrom. My invention is not limited to the precise form and relative arrangement of the contacts shown and described, although I prefer the spring-blades, for the reason that they afford highly efficient contacts, presenting but slight resistance, and hence not liable to become overheated. Moreover, by virtue of the friction created thereby against the fixed contact-posts the switch will readily remain in either position without the necessity of locking devices. It will be readily understood that any suitable means for locking the hood 29 in closed position over the switch may be employed, if desired, and I have not, therefore, illustrated any such locking means herein.

I claim—

1. An electric switch of the character described, comprising in combination a bed-plate, a pair of standards mounted thereon, a U-shaped switch member pivotally mounted intermediate its open and closed ends in and between said standards, spring contact-blades secured to each of the arms of the switch member on opposite sides of its pivotal point, and a pair of contact-posts mounted on said base-plate adjacent and coöperating with the spring contact-blades on each side of the switch-pivot, substantially as described.

2. An electric switch of the character described, comprising in combination a bed-plate, a pair of standards mounted thereon, binding-posts electrically connected with said standards, a U-shaped switch member pivotally mounted intermediate its open and closed ends in and between said standards, spring contact-blades secured to each of the arms of the switch member on opposite sides of its pivotal point, a pair of contact-posts

mounted on said base-plate adjacent and cooperating with the spring contact-blades on each side of the switch-pivot, and binding-posts electrically connected with one of said pairs of contact-posts, substantially as described.

3. An electric switch of the character described, comprising in combination a bed-plate, a pair of standards mounted thereon, binding-posts integral with said standards, a U-shaped switch member pivotally mounted intermediate its open and closed ends in and between said standards, spring contact-blades secured to each of the arms of the switch member on opposite sides of its pivotal point, a pair of contact-posts mounted on said base-plate adjacent and coöperating with the spring contact-blades on each side of the switch-pivot, and binding-posts integral with one of said pairs of contact-posts, substantially as described.

4. An electric switch of the character described, comprising in combination a bed-plate, a pair of standards mounted thereon, binding-posts integral with said standards, a U-shaped switch member pivotally mounted intermediate its open and closed ends in and between said standards, spring contact-blades secured to each of the arms of the switch member on opposite sides of its pivotal point, a pair of connected contact-posts mounted on said base-plate above the pivot of the switch, a pair of contact-posts mounted on said base-plate below the pivot of the switch, said contact-posts coöperating with the spring-blades at their respective ends of the switch, and a pair of binding-posts integral with said last-named pair of contact-posts, substantially as described.

5. The combination with a bed-plate and an electric switch mounted thereon, of a hood or shield open at its lower end and inclosing and housing said switch and bed-plate and pivotally mounted on the latter at its upper end so as to allow the lower end to be swung outwardly from over the switch to permit the manipulation of the latter, substantially as described.

6. The combination with a bed-plate and an electric switch mounted thereon, of a hood or shield open at its lower end inclosing and housing said switch and bed-plate and pivotally mounted on the latter at its upper end so as to swing outwardly from over the switch, the upper portion of said hood overlying the top of the bed-plate being provided with an inclined weather edge, substantially as and for the purpose described.

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